

Coggeshall, (H. J.)



## REMARKS

ON

# FOOD AND DRINK ADULTERATION,

BY

HON. H. J. COGGESHALL,

IN THE SENATE OF NEW YORK, WEDNESDAY  
EVENING, APRIL 8, 1885.



The Senate, being in committee of the whole, having under consideration the bill, entitled "An act to amend an act entitled 'An act to prevent the adulteration of food and drugs,'" Mr. COGGESHALL said:

Mr. CHAIRMAN—Good, pure food is an unquestioned necessity for the development and maintenance of the human race. One would not suppose that impure or adulterated food and liquors would ever be offered for sale. That man would deliberately sell to his fellow that which tends to impair health and cause disease seems to us strange and almost unaccountable. But, with many, avarice overmatches every other consideration, and we are confronted by the fact that all classes and conditions of people in this State, as well as in other States of our union, daily purchase and consume food and liquors which have been deliberately poisoned, or grossly adulterated by unscrupulous and heartless tradesmen and manufacturers. Hence the neces-

sity for an ironhanded law, with which to throttle and crush out these crimes against humanity.

### ADULTERATION OF BEER.

Until quite recently the subject of the adulteration of beer has not attracted any considerable attention in this country. In 1882, because of a great scarcity of that product in the United States, hops advanced to the unprecedented price of one dollar per pound. This advance resulted in the practice of undue economy in their use, and, in many instances, the introduction of foreign substances as a substitute in the manufacture of beer. The hop being the only natural and legitimate product that may properly be used for bittering the beer and imparting to it the health giving qualities to which reference has been made, should be used to the exclusion of any and all foreign adulterants, for the sake of the physical well-being of the people, and, aside from this consideration, upon economic grounds as well.

### THE HOP INDUSTRY.

One of the great and growing industries of this State is the culture of hops. Over 40,000 acres of land are devoted to the growth of hops in this State alone, and \$14,000,000 are invested in this one industry. An acre of hops, with two poles to the hill, requires 1,500 poles, but, taking an average of 1,000 poles to the acre, we have in use 40,000,000 poles, which at  $12\frac{1}{2}$  cents each, necessitate a constant investment of working capital to the amount of \$5,000,000. There are not less than 5,000 hop kilns in the State, worth with stoves and hop presses, an average of at least \$1,000 each, which makes an investment of property in hop kilns, stoves and presses of \$5,000,000. An acre of land prepared and set with hops is worth at least \$100 more than if used for other purposes. In the increased value of 40,000 acres we have an additional item of \$4,000,000,



making, as before stated, an aggregate value of \$14,000,000 invested in the cultivation of hops.

Again, in this State alone more than 40,000 women and children are employed for one month every year, in picking hops, and thereby not only enjoy fresh air, health and recreation, but gain over \$1,000,000 in wages. In addition to the million of dollars annually paid to the women and children, we pay \$1,500,000 every year to the laboring men for the cultivation and handling of the hops, and \$150,000 to the railroads for their transportation.

For the hop crop of 1882 the farmers of central New York received over \$10,000,000 in cash. With this money many have cleared their farms from debt, and many have improved their buildings, thus paying it out again and distributing it, and sharing their prosperity with the architect, the mason, the builder, the laboring man and manufacturing interests generally.

A reduction in the use of hops, and the use of substitutes in their place will therefore not only injure the people physically but also pecuniarily.

#### THE USES OF BEER.

One important provision in this bill is that which seeks to compel the manufacture and sale of pure malt liquors, or beer and ale. Beer is used daily as a beverage. It is continually prescribed by physicians as a tonic, and is consumed in large quantities for medicinal purposes. It is almost universally admitted that the use of pure ale, beer and similar malt beverages is at times beneficial for delicate persons. Albert Schmidt (*Archiv des Pharmacie*, 1878) says that whatever may be thought of the nutritive value of beer, it is unquestionably to be removed from the class of luxuries and placed among the agents of nutrition. Stille and Maisch (*National Dispensatory*), after enumerating various ailments in which the hop exerts a

peculiar beneficial action, owing to the association in it of a bitter tonic with a direct sedative of abnormal action, say that a pure and strongly hopped beer contains all the virtues of this agent, and that malt and hop extracts are largely prescribed for delicate persons. Parks, in his *Manual of Hygiene* (5th ed.), maintains that pure beer, made from malt and hops, is useful as a tonic and for medicinal purposes.

That the constituents of beer should be pure, and the manufactured article free from adulteration, no one has ever for a moment denied. The use of substitutes for grain and hops has been held by the most eminent analysts to be deleterious to the beer manufactured therefrom, rendering it unhealthful.

#### LAWS OF FOREIGN COUNTRIES.

The laws of foreign countries have in the past prohibited, and they now prohibit and exclude all substitutes for malt in the production of beer. After an extended and exhaustive discussion at the international congress of medical sciences at Brussels, in September, 1875 (*Archiv des Pharmacie*, 1876), the following resolutions were adopted:

1. Only those fermented beverages are truly beers which are made from grain and hops.
2. No other substance can replace these, in whole or in part.
3. All substitutes are to be regarded as deceitful adulterations, and should come under penalty of the law, even when not injurious to health.

That substitutes for malt and hops have been, and are now, used in the manufacture of beer, both in Europe and in this country, there is no doubt. Donovan (*Domestic Economy*, vol. 1.) so long ago as 1830, stated that *cocculus indicus*, aloes, wormwood, quassia, gentian and other articles were used to "doctor" porter. The importation of 300,000 pounds of aloes into England during the first four years of British possession of the Cape of Good Hope aroused suspicion. Donovan fur-



ther asserts that licorice, treacle, mucilage of flax seed, potash, lime salts and a variety of other substances were kept on hand by brewers, until the law interposed and forbade the use of any thing but malt and hops.

Dr. Ure is quoted by Watts (Dictionary of Chemistry, 1868) as having said: "As long ago as the reign of Queen Anne, brewers were forbidden to mix sugar, honey, Guinea Pepper, *essentia bina* (burnt wort,) *cocculus indicus*, or any other unwholesome ingredient in beer, under certain penalties." He also stated that a list of the unlawful substances seized at different breweries and brewers' druggists' laboratories in London, as copied from the minutes of a committee of the house of commons, disclosed the following: *Cocculus indicus* mul-tum (an extract of *cocculus*,) coloring, honey, hartshorn, shavings, Spanish juice, orange powder, ginger, grains of paradise, quassia, licorice, caraway seeds, capsicum mixed with drugs.

Schmidt (*Chemical News*, March 1, 1864) states that the attention of the police having been drawn to the importation of large quantities of *cocculus indicus* to St. Petersburg, it was found that this berry was used to adulterate certain drinks, but especially beer.

Blyth (Manual of Practical Chemistry) says that prussic acid has been found in beer.

Wagner (Jahresbericht, 1877) reports that Guessmayer found absinthe in beer; and Kirchmann says that he found that brewers near Weimar were using cow parsnip as a substitute for hops.

Ranwetz (Wagner's Jahresbericht, 1865) found aloes in the residue that had settled from an otherwise excellent beer.

Souberran (Falsification des Aliments) states that it was established in a discussion of the academy of medicine in Belgium, in 1872 and 1873, that the Belgian brewers not uncommonly used *cocculus indicus* to economize both malt and hops.

### NO SUBSTITUTE FOR HOPS.

In corroboration of my belief that there is no substitute that can take the place of hops in the manufacture of beer, I submit the following statement furnished me by an able chemist, Professor Edward Martin, of New York, in response to questions submitted to him :

Is there any substitute equal to hops for beer making ?

The authorities on this subject all seem to say that there is no substitute for hops. This can readily be seen by anyone, even though he be not an authority ; for as there is no plant which contains the constituents of hops, nothing can be used in their place for making what is known as beer or ale.

If not positively poisonous, does not the use of substitutes of any kind deteriorate the quality of the beer, and consequently render it less beneficial as a medicine or as a beverage ?

The authorities seem to think that although the substitute may not always cause the beer to deteriorate (this of course depends on the substitute used), as regards its medicinal qualities when made with a hop substitute, there can be but one opinion, and that is, it should not be allowed. The physician ordering beer for an invalid does so under the impression that it is made of hops, thus containing certain tonic properties so valuable at times for the sick. Of course the substitute would not be as good, and might be dangerous to the invalid or sick person, although a healthy person might drink such beer with safety.

Have you investigated sufficiently to determine whether adulteration is practiced to any extent ? If so, please state your conclusions as to what extent, and your opinion as to the necessity of legislative action.

The only adulteration which I know of now as being practiced, is the substitution of rice and corn for malt, and the addition of carbonate of soda and salt ; some use glucose as



well. But what is really done in the brewery is a more difficult matter to determine. As long as there is no proper law, or if the law be not enforced, just so long will the brewer, or any manufacturer of food products, continue to adulterate. I consider that legislation can certainly do no harm to the honest brewer, and may be of great benefit to the public at large, and I therefore deem such legislation most proper and necessary.

Are substitutes for hops and malt used in the manufacture of beer in Europe, and in this country and State, and if so, what kind?

As regards the substitutes used for hops and malt, there can be no doubt that, in this country at least, a substitute for hops is used when hops are dear. As for malt, there can be no doubt that corn, rice and glucose are substituted in part, but the extractive matter upon which authorities lay so much stress, when it is used as an article of diet, is diminished.

Have you any positive information or knowledge, or have you been informed in any way that such is the case?

I was informed that the brewers' supply stores sold large quantities of prepared corn, rice and glucose, also carbonate of soda and salt.

How do these adulterations of food and drink affect the people?

The effect of food and drink adulterations upon the public health must be injurious, as so many dangerous and poisonous substances have been and are used. It is not probable that a dishonest manufacturer would deliberately choose a poisonous adulterant in preference to a harmless one, but the danger lies in the fact that the cheaper substitutes are often poisonous. Many a manufacturer is driven into using these, for the reason that his competitors use them, and he must do as they do, or suffer heavy loss and, perhaps, pecuniary ruin. It is always agreed that the quantity of the harmful adulterant used is so small that no harmful effects would follow its use. But this

is a matter that no one has a right to theorize on, as no positive proof can be given that these adulterants, even when taken in small quantities, are harmless. Where the public health is concerned adulteration should not be allowed. Besides its evil effects on the health of our citizens, adulteration depreciates the value of the articles of commerce with which it competes. The articles in question must become as cheap as the adulterated article before any sale can be found for it.

This was illustrated when adulterated milk was largely sold. The honest producer found that, no matter what the quality of the milk he produced was, he could get no better price for it, from the fact that the market was overstocked with skimmed milk and milk and water. Some years ago the citizens of New York city paid at least \$5,000 per day for water sold as milk.

The honest manufacturer or dealer would be only too glad to have some law made and enforced, for it would be for his protection and profit. Those who oppose such laws, which have been deemed necessary and just in all ages and in all countries, are the dishonest dealers and manufacturers, guilty of the very meanest and most contemptible of crimes — that of petit larceny of the public health and pocket.

Are picric acid, cocculus indicus and the other substances poisonous?

Most of the bitters used, or said to have been used, are poisonous, but it must be remembered that a substance is poisonous only where the quantity and not the quality is considered. It is difficult to say what effect many of these substitutes have in small, repeated doses, but it is certainly safe to assert that they can do even the healthy, robust person harm in the end. Lead, even when given in minute doses for a considerable period of time, produces the most fatal effects. Many substances seem to act more energetically on the system, when taken in small, repeated doses, than they would if the total



amount were swallowed at once. Many of these bitters being seldom, if ever, used in medicine, we have very little data on this subject, and certainly no one cares to be experimented on to determine whether the fraud is harmful or not. It is unnecessary and fraudulent, view it in what way you will, and is always intended to swindle the public. In this case, as in many, the poor, depending for a livelihood on their daily labors, are deprived of their health and money to benefit those who hardly deserve the name of men.

#### ADULTERATION OF FOODS AND DRUGS.

The results of the analyses of various foods, drugs and condiments, during the year 1884, by Dr. Miller and Professor Martin, show the following facts:

Pickles contained copper (used to impart a bright green color), three or four small ones containing a full medical dose of sulphate of copper.

Mustard consists of a little mustard, flour and plaster of Paris, the whole being colored with a poisonous coal tar color called Martin's yellow. It was found by Dr. Edson that from thirty to forty grains of this color killed dogs weighing fifty pounds. The manufacturers claimed to use only one-half of one per cent of this. It acts as an irritant poison.

Coffees were found to be coated and colored with Prussian blue, lamp-black, yellow ochre, chromate of lead, etc.

Thousands of pounds of candies were seized and destroyed because they were found to be colored with chromate of lead and arsenical aniline colors.

Maccaroni was colored yellow with chromate of lead.

Bologna sausage was colored red with aniline colors.

Canned fruits were contaminated with lead and tin. Hundreds of cans were seized and destroyed.

Chewing tobacco was colored with the poisonous Martin's yellow.

The so-called artesian well water was found to be contaminated with sewage, and these waters were used for making mineral water.

Quinine was adulterated to the extent of forty per cent with milk, sugar or with some of the cheaper alkaloids, so that a patient would only get a portion of the quantity ordered.

In Paris, in 1883, 3,000 out of 6,000 samples of food and drink were found to be adulterated. In England and Wales, in 1880, out of 17,673 samples of food and drink, fifteen per cent were adulterated; in 1881, out of 17,823 samples, fourteen per cent, and in 1882, fifteen per cent of 19,439 samples. In England, of 1,427 samples of spirits and beer, twenty-four per cent were adulterated in 1881, and in 1882 twenty-five per cent.

Now, when we take into consideration the fact that in England laws have been made and enforced for the past eighteen hundred years, what must be the condition of these articles in this country, where it is only within the past few years that any attention at all has been paid to the matter? A healthy person might drink or eat adulterated articles for a long time without harm, but we can not look at the matter in that light. Our standard must be what is not injurious to the invalid, for what cannot harm that class is safe for all.

Malt liquors are of sufficient importance to warrant an oversight of their manufacture and sale in the interests of public health. The use of hurtful hop substitutes, of ingredients for concealing the defects of such beverages, and the addition of water by retailers to increase the quantity should all be rendered dangerous for brewers and dealers by vigorous prosecution. Legislation on this subject is required in the interests of health, because beer is so often used as a means of strengthening the invalids. If it is made from rice or corn instead of malt, the nutritive value is lessened; and, if some substitute for hops is used, the tonic effect sought is not there. Cer-



tainly, if rice or corn are used instead of malt, the intoxicating properties are largely increased, thus inducing intemperance.

Dr. Waller says that our citizens must be protected from the ignorance and dishonesty of dealers in articles of food and drinks. The law rightly assumes that dealers have sufficient acquaintance with articles in their line to be able to distinguish between what is good and what is bad. There is scarcely an article of food in the market, except the egg, that is not more or less adulterated, and many cases of sickness, which baffle the skill of the physician, are undoubtedly due to the vile adulterations of our food and drink. The following tabulation includes the articles most exposed to falsification, together with the adulterations more commonly employed :

#### COMMON ADULTERATION.

*Butter* — Water, lard and other fats.

*Bread* — Alum, flour other than wheat.

*Cheese* — Lard, oleomargarine and common sweet oil.

*Confectionery* — Glucose, starch, flour, artificial essences, poisonous pigments, plaster of paris and terra alba.

*Coffee* — Chicory, peas, rye, corn and burnt sugar.

*Honey* — Sugar, glucose.

*Milk* — Water.

*Mustard* — Flour and Cayenne pepper.

*Pickles* — Salts of copper.

*Spices* — Flour and Cayenne pepper.

*Spirits* — Water, fusil oil, aromatic ethers and burnt sugar.

*Teas* — Foreign leaves, indigo, Prussian blue, exhausted tea leaves, gypsum and soapstone.

*Wine* — Water, spirits, aniline and vegetable colors.

The following are the results of the work of the English Society of Public Analysts :

Year.	Samples examined.	Samples adulterated.	Per cent adulterated.
1875 & 1876.....	15,989	2,895	18.10
1877.....	11,943	2,371	17.70
1878.....	15,107	2,505	16.58
1879.....	17,574	3,032	17.25
1880. ....	17,919	3,132	17.47

Of the total number of samples examined the proportion of adulteration is classified as follows:

	Per cent.
Milk.....	50.98
Butter.....	5.73
Groceries.....	12.90
Drugs.....	2.52
Wine, spirits and beer.....	15.18
Bread and flour . ....	2.68
Waters (mineral).....	9.18
Sundries.....	0.83

Examinations of milk (not including skimmed milk) by the inspector of the State Board of Health in New York gave the following:

Years.	No. Samples tested.	No. Samples adulterated.	Per cent.
1880.....	1,514	167	11
1881.....	1,110	51	4.6
1882.....	1,775	120	6.7

The work of the board of health of New York in 1882 gave the following result:



Articles.	No. Samples tested.	No. Found adulterated.	Per cent.
Butter.....	40	21	52.50
Olive oil.....	16	9	56.25
Baking powder.....	84	8	9.52
Flour .....	117	8	6.84
Spices .....	180	112	62.22
Coffee (ground).....	21	19	90.48
Maple syrup.....	3	1	33.33
Honey .....	3	1	33.33
Candy (yellow).....	10	7	70.00
Brandy.....	25	16	64.00
Sugar (brown).....	67	4	5.79

The official report of the United States tea examiner at New York city, Mr. James R. Davis, states that from March, 1883, to December of the same year, 856,281 packages (40,000,000 pounds) of tea were passed upon, 7,000 packages (325,000 pounds) being rejected.

Few data are at hand indicating the extent of food falsifications met with in Boston. In 1872 an examination was made of various alimentary commodities, showing that about one-half were impure, but in this instance the samples were not taken indiscriminately. An examination made in 1874 demonstrated that of 119 specimens of groceries tested, 23 (19.33 per cent) were adulterated. In 1879, 316 samples were examined, revealing an adulteration of about 18 per cent.

#### THE USES OF GLUCOSE.

According to the *National Druggist*, glucose is made from almost any thing and is used in almost everything. At the request of the commissioner of internal revenue of the United States, a committee of the National Academy of Sciences was recently appointed, consisting of professors from the university of Pennsylvania, Yale college, Columbia college, Harvard

college and Johns. Hopkins university, to scientifically investigate the various products known as glucose, grape sugar, mattose, etc. The committee found that glucose is made from many things besides starch and potatoes, such as leave-, straw, rags, chips, twigs, and the residue from breweries, distilleries, etc. The following from their report shows to what use the glucose is put :

“ Both glucose and grape sugar find extensive applications for a great variety of purposes as substitutes for cane sugar or for barley. The general purposes for which glucose, or starch sugar, are used, are :

1. For the manufacture of table syrup. This consists of a nearly, or quite, colorless glucose, with a sufficient addition of cane sugar from the sugar refinery to give it the flavor and appearance of a highly refined molasses. The quantity of cane sugar added varies from two to thirty-three per cent.

2. As a substitute for barley malt in the brewing of ale or beer. This is really a substitute of Indian corn for barley, but it constitutes a very imperfect one, as the corn, by the treatment employed in extracting its starch for conversion into glucose, is completely deprived of all the nitrogenous bodies and mineral salt which it originally contained. Hence the glucose alone, which is simply transformed starch, is substituted for the entire barley grain, with its great variety of valuable constituents. This is not true, however, of the mattose produced from the entire corn by the action of the malt. This material contains all the valuable constituents of the corn, together with the additional substitutes which are rendered soluble by the action of the diastase of the malt.

3. As a substitute for cane sugar in confectionery.

4. For the adulteration of cane sugar, to which it is added to the extent of 20 per cent or more.

5. As a substitute for cane sugar in canning fruits, and in the manufacture of fruit jellies.



6. For the manufacture of artificial honey. This is neatly put up in glass containing a small piece of genuine honey-comb.

7. In the manufacture of vinegar.

8. In the manufacture of liquor-coloring, used in mixing liquors and making artificial liquors.

9. Other more limited applications — manufacture of wine; in cooking; in the preparation of sauces; as an addition to same canned meats, especially to corned beef; in the preparation of chewing tobacco.

Dr. B. F. Davenport, analyst, of Massachusetts, for the year ending December 31, 1883, reported as follows: "I have examined 680 samples of United States pharmacopoeical drugs, and have found 284 of them, that is 41.67 per cent, to be adulterated within the meaning of the act under which I was appointed." Think of it! Over 40 per cent of the drugs for the healing of sick people, in puritan and honest Massachusetts, adulterated in an outrageous and shameless manner! If drugs are thus tampered with, how much more are the foods we eat and the liquors we drink charged with dangerous and health-destroying impurities. It is useless to present long lines of statistics to prove the facts of these adulterations. The evidence of their existence is found in every open market, and it is familiar to you all.

#### EFFECT OF ADULTERATIONS.

The effects of these adulterations are not always recognized as immediate poisonings, but they do their deadly work slowly and by stealth. We see these effects in children who are obliged to subsist on impure, weak and poisoned milk. Their pale faces, emaciated bodies and stupid minds appeal, with mute but touching eloquence, for health and protection. We see the effects of adulterated food in the wan countenances and cadaverous forms of the youth in our common schools, and in

the young and old in the mills, factories and shops of all our cities. These adulterations, such as chalk, sand, plaster of Paris, corrosive acids, and distinctive poisons of whatever kind, produce indigestion, pain, sleeplessness, and a train of symptoms of which insanity or kindred diseases are the culmination. We see the effects of the adulteration of drinks in the unhealthy faces of those who consume hashish in their beer and ratsbane in their whiskey. We believe that delirium tremens and alcoholism (so called) are largely the product of poisonous drugs, and not the work of pure alcohol. In this opinion we are sustained by some of the most eminent physicians of our times. Knowing the evil effects of all these adulterations, is it not a clear and plain duty on the part of the legislature to put a stop to this nefarious business?

#### THE OBJECT OF THE BILL.

The object of this bill is to prevent anything unwholesome from being sold to the people of this State in the form of either food or drink. Our laws have already created a State Board of Health, and constituted this board the guardian and protector of the people against the spread of contagious diseases, and against unwholesome articles of food.

The bill under consideration proposes to enlarge the powers and increase the facilities of the Board of Health, and to make it more and more the duty of the board, with these enlarged powers, to carry on a relentless warfare against all adulterations of the food and drink of the people of this State.

#### LEGISLATION NEEDED.

Some legislation upon this subject of adulteration is loudly called for by the people. My own constituents have appeared here by thousands as petitioners for protection against adulteration of fermented beverages. Even with its present limited means, the board of health has detected and put a stop to some



outrageous adulterations of coffee, and made war upon the use of unwholesome water by the soda water manufacturers; and all this during the past year.

With the constantly increasing cry against adulterations, and with the board of health already in the field as the properly constituted authority for the detection and prevention of these adulterations, what possible objection can be honestly brought against the provisions of this bill? It was urged against the label bill, brought forward with the same object as this bill (and favored by me for that object), that the printing and putting on of the millions of labels required by the bill, was as great a tax upon the innocent as upon the guilty. No such objections can be urged against this bill now under consideration (and besides, by way of parenthesis, no man with a pure article for sale will hesitate about the expense of advertising it as pure. This extraordinary expense cry sounds like the wail of a guilty soul). But under the proposed law, if the manufacturer is producing a pure and healthy article of food or drink, he will not be taxed or troubled by the provisions of this bill. If the manufacturer permits his greed of gain to interfere with the health of the people of this State by the use of adulterations, that manufacturer will find his fraud detected by the test tube and the microscope of the chemist, and feel the vengeance of an outraged people in the shape of fine and imprisonment.

The bill has been carefully drawn, so that, under its provisions, the innocent shall not suffer nor the guilty escape. I believe it will commend itself to the good judgment and common sense of the senate (and assembly) as a wise and timely remedy for the evils of adulterations, against which our constituents have so earnestly and repeatedly prayed to be protected. And I urge that you make it, by your action, a law of the State, not as a gift or a favor, but as a sublime duty, which as legislators we owe to the people of this commonwealth.

When this duty shall have been performed, the prosperity, the happiness and the highest temporal interests of our fellow citizens will be conserved, the hand of the cowardly assassin of the people's health will be stayed and the unscrupulous devotee to avarice will no longer be permitted to pillage upon human life, nor manufacturing Shylocks be allowed

"To gain those riches they can ne'er enjoy."





